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March 15, 2004

AGENDA ITEM 7a

TO: MEMBERS OF THE INVESTMENT COMMITTEE

I. SUBJECT: Update on Environmental Investing

II. PROGRAM: Alternative Investment Management (AIM) Program

RECOMMENDATION: AlM Staff recommends the creation of the "CalPERS"

Environmental Technology Program", as outlined in

Attachment 1.

IV. ANALYSIS:

For the past year AIM Staff has been researching potential new investment opportunities. One area of focus has been the area known as environmental or clean technologies. AIM Staff has prepared a research and recommendation report, which is contained in Attachment 1.

As a result of the research, AIM Staff is recommending the creation of the "CalPERS Environmental Technology Program". Details of the program are contained in Attachment 1, which will be presented at the Investment Committee meeting.

The following are the highlights of the CalPERS Environmental Technology Program investment strategy:

Broad and Flexible Scope

- Reflect the diversity of opportunities with environmental benefits
- Encompass a large enough pool of investment opportunities

Emphasis on Diversification

- By Sector
- By Geography: Global perspective
- By Stage and Structure

Appropriate Benchmark

- New, separate risk-adjusted benchmark to measure progress (note: returns for first five years expected to be negative due to long term horizons, program growth, and negative "J-curve" of private equity returns cycle)
- The Program is expected to generate attractive returns over the long run

Appropriate Resources

 Secure appropriate CalPERS resources to manage Environmental Technology Program

Cautious Approach

- Portions of the market are currently small, but the market is evolving
- There are several risks to consider; as a result, CalPERS will take a cautious approach
- Use time to select the most qualified partners and to find the very best investment opportunities
- Over the next few years, Staff proposes to commit up to \$200 million to investments in the environmental technology sector (<u>only if attractive risk-</u> adjusted opportunities can be discovered)
- AIM Staff will enhance reporting to encompass this new program, and the Investment Committee will be kept posted as the Program evolves

The Program will be implemented very cautiously, using existing AIM investment guidelines and policies (e.g. Delegation of Authority). Staff will be available to answer questions at the Investment Committee meeting.

V. STRATEGIC PLAN:

Goal IV: Assure that sufficient funds are available, first, to pay benefits and, second, to minimize and stabilize employer contributions.

Members of the Investment Committee March 15, 2004 Page 3

VI. RESULTS:

If the recommendation in this agenda item is approved, it will potentially result in an investment commitment of up to \$200 million dollars over the next several years.

	Prepared by:	
	, ,	Joncarlo Mark
		Portfolio Manager
		Leon G. Shahinian
		Senior Portfolio Manager
		Richard J. Hayes
		Senior Investment Officer
	_	
Mark Anson		
Chief Investment Officer		

CALPERS ENVIRONMENTAL TECHNOLOGY PROGRAM MARKET OVERVIEW & STRATEGY

Prepared by:

CalPERS Alternative Investment Management (AIM) Team



PRESENTATION FORMAT

- Environmental Technologies
- Research Approach
- Market Analysis
- Investment Strategy



ENVIRONMENTAL TECHNOLOGIES

Environmental technologies encompass solutions that are <u>more</u> <u>efficient</u> and <u>less polluting</u> than existing technologies.

MORE EFFICIENT

Recycling, reusing, reducing the quantity of natural resources used

LESS POLLUTING

Reducing emissions, refuse, and contamination to air, water, and land

CLEAN AIR & ENERGY CLEAN WATER CLEAN MATERIALS



CLEAN AIR & ENERGY EXAMPLES

Generation

Consumption

• Grid Management, Microgrids

	Renewable Energy	Hydrogen Economy
11	• Wind	• Fuel Cells:
en	 Solar/Photovoltaic (PV) 	– Micro (Portable Electronics)
"Green	Wave & Tidal	Stationary (Industry)
),,	• Biomass	Motive (Automotive)
	Geothermal	 Hydrogen Storage & Infrastructure
	Clean Transitional Energy	Energy Storage & Efficiency
_	3,	
na	 Scrubbing & Filtering 	 Distributed Generation**
tiona	Scrubbing & FilteringCo-firing Plants	Distributed Generation**Back-up Power**
raditiona		

^{**}Incorporates technologies from other quadrants



CLEAN WATER EXAMPLES

ORIGIN/SUPPLY

- Desalination (Reverse Osmosis)
- Grey Water Recycling

PROCESS

- Filtration
- Purification and Treatment

DISTRIBUTION

- Metering and Conservation
- Infrastructure Efficiency



CLEAN MATERIALS EXAMPLES

RECYCLING/ RE-USE

- Smart Design (end-of-life considered)
- Recycling & Re-use technologies
- Products that use recycled/reused materials

WASTE MANAGEMENT

- Biodegradable materials
- Waste processing & treatment
- Bioremediation

CLEAN ALTERNATIVES

- Bioproducts
- Enabling materials for energy & water technologies



PRESENTATION FORMAT

- Environmental Technologies
- Research Approach
- Market Analysis
- Investment Strategy



RESEARCH APPROACH

- A dedicated team of 4 people gathered and analyzed information over the past year
- Participated in multiple roundtable discussions to help build investment thesis
- Contacted upwards of 200 industry experts ranging from:
 - Over 40 public and private corporate entities
 - Over 40 private equity firms
 - Over 35 government agencies, think tanks and universities





PRESENTATION FORMAT

- Environmental Technologies
- Research Approach
- Market Analysis
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MARKET SIZE

Technology / Sector	Current Market	High Growth Window	Potential Market	Commercial Viability	Environmental Impact Potential
Water	\$87B*	2-15 yrs +	\$220B* in 20 years	High	Decreases water pollution and use
Solar PV	\$3.5B	5-15 yrs	\$6B by 2006; \$27.5B by 2012	Med-High	Emission-free energy, but has limitations (need backup source)
Wind Power	\$5.5B	Now	\$49B by 2012	High	Emission-free energy, but has limitations
Cleaner Coal	\$3B	1-15 yrs +	\$6B 2006	Med-High; Driven by regulation	Decrease air emissions by 84% in coal power plants
Hybrid Vehicles	\$3B	2-10 yrs	\$45B by 2009	Med-High	Decrease tailpipe emissions by 50%
Fuel Cells (auto)	R&D only	15-20 yrs +	\$170B by 2020	Difficult to predict	Decrease emissions by 60% if renewable sources used for H2
*Sourced through various publications 10					

ENVIRONMENTAL TECHNOLOGY IS GLOBAL

	Predominant Markets
North America	Energy: Wind, Solar, Biomass: cogeneration, animal waste to energy; Distributed Generation Water: Desalination, Filtration/ Purification
Europe	Energy: Wind, Solar, Biomass: cogeneration, waste to energy, wave, geothermal Materials: Recycling of high-margin materials
Japan/ Pacific	Energy: Wind, Solar, Geothermal, Fuel Cells, Hydrogen Materials: Recycling electronic components
Developing Countries	Energy: Wind, Solar, Hydro Water: purification, wastewater treatment, agriculture Materials: Waste Management



MARKET DRIVERS

Market	Customer Product, Price, Efficiency, Reliability Corporate Green Credits, Competitors, Supply Chair		
Social		Green Consumers, Media, NGOs	
Regulatory		Compliance, Incentives, Pre-emptive Actions	
Internat	tional	Trade Agreements, Kyoto Protocol, ISO 14001, Geopolitical pressure	
Risk		Insurance, Environmental and Health Liabilities	



REGULATORY DRIVERS

Kyoto Protocol

<u>Purpose</u>: to curb global warming

Signed: 1997, pending ratification

Commitment: 5% below 1990 emissions levels by 2012

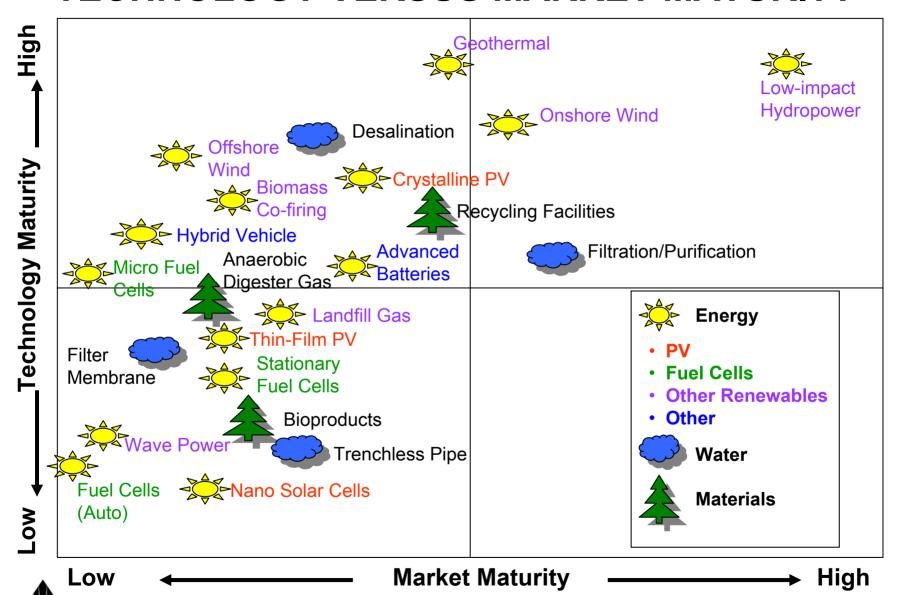
Market mechanisms allowed: emissions trading

Legally Binding, but no substantive penalties for non-compliance

- **RPS** (Renewable Portfolio Standards) CA, 13 other states
- ROC (Renewable Obligation Certificates) Europe
- **Subsidies** critical for commercialization of some technologies, but not a reliable revenue source (subject to federal & state budgets)
- **Tax incentives** ex. Production Tax Credit very effective, but cannot be passed through to tax-exempt investors like CalPERS
- Requirements Water contaminants, air quality strong drivers



TECHNOLOGY VERSUS MARKET MATURITY



MARKET RISKS -- SUMMARY

- Extended time to market due to:
 - Significant barriers to adoption (consumer education)
 - Technology development
 - Lack of funding
 - Permits & legal requirements
 - → Resulting increased costs
- In some sectors, experience deficit among entrepreneurs
- Unreliability of regulatory drivers & incentive programs
- Customers are often public/regulated agencies
- Most environmental technologies are substitution products; cost competitiveness is critical



INVESTMENT RISKS -- SUMMARY

Limited investment opportunities

- The market is still very small (e.g. 2% of Venture Capital market in 2002)
- Need to keep charter flexible and broad

Finite number of experienced investors

 Need to diversify, focus on investors with proven track records, and stick to percent of fund maximum targets (e.g. 10-15%)

Undercapitalization of certain stages

Need to ensure future long-term financing vision in place for opportunities

Overexposure to any one target area

- Sector => Need to stay diversified
- Geographic => Need to be globally diversified
- Investment stage => Opportunities can't to be too early or too small
- Investment structure => Need good alignment of interests



PRESENTATION FORMAT

- Environmental Technologies
- Research Approach
- Market Analysis
- Investment Strategy



PROPOSED AIM INVESTMENT STRATEGY

Broad and Flexible Scope

- Reflect the diversity of opportunities with environmental benefits
- Encompass a large enough pool of investment opportunities

Emphasis on Diversification

- By Sector
- By Geography: Global perspective
- By Stage and Structure

Appropriate Benchmark

- New, separate risk-adjusted benchmark to measure progress (note: returns for first five years expected to be negative due to long term horizons, program growth, and negative "J-curve" of private equity returns cycle)
- The Program is expected to generate attractive returns over the long run



PROPOSED AIM INVESTMENT STRATEGY (cont'd)

Appropriate Resources

 Secure appropriate CalPERS resources to manage Environmental Technology Program (will request resources in next budget cycle)

Cautious Approach

- Use time to select the most qualified partners and to find the very best investment opportunities
- Over the next few years, Staff proposes to commit up to \$200 million to investments in the environmental technology sector (only if attractive risk-adjusted opportunities can be discovered)
- AIM Staff will enhance reporting to encompass this new program, and the IC will be kept posted as the program evolves



Next steps

- Proceed cautiously with appropriate resources
 - Manage market, regulatory, and investment risks by investing slowly and carefully
- Take a very diversified portfolio approach
- Use existing investment guidelines and policies (e.g. Delegation of Authority) to implement program
- Create a relevant benchmark to evaluate the Program's success





CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM BOARD OF ADMINISTRATION INVESTMENT COMMITTEE

MINUTES OF MEETING OPEN SESSION

March 15, 2004

The Investment Committee met on Monday, March 15, 2004 in the Lincoln Plaza Building, 400 P Street, Auditorium, Sacramento, California.

The meeting was called to order at approximately 9:30 a.m. and the following members were present:

Rob Feckner, Chair
Priya Mathur, Vice Chair
Sidney Abrams
Philip Angelides
Willie L. Brown, Jr.
Robert F. Carlson
George Diehr
Sean Harrigan
Michael Navarro
Mike Quevedo, Jr.
Kurato Shimada
Charles Valdes
Steve Westly

Ted Eliopoulos and Christine Solich represented Philip Angelides Joy Higa represented Steve Westly

AGENDA ITEM 2 - APPROVAL OF AGENDA

At the outset there were no changes to the agenda order, but later in the meeting it was decided to take up Items 7a and 9g following Item 5.

AGENDA ITEM 3 – APPROVAL OF FEBRUARY 17, 2004 MEETING MINUTES

On **MOTION** by Ms. Mathur, **SECONDED** and **CARRIED** that the February 17, 2004 Open Session minutes be approved as presented.

AGENDA ITEM 4 - ELECTION OF CHAIR AND VICE CHAIR

Mr. Carlson nominated Mr. Feckner to Chair the Committee.

On **MOTION** by Mr. Carlson, **SECONDED** and **CARRIED** that Rob Feckner be elected Chair of the Investment Committee by unanimous ballot.

Ms. Higa (on behalf of the Controller) nominated Priya Mathur to Vice Chair the Committee.

On **MOTION** by Mr. Harrigan, **SECONDED** and **CARRIED** that Priya Mathur be elected Vice Chair of the Investment Committee by unanimous ballot.

AGENDA ITEM 5 – CaIPERS TOTAL FUND PERFORMANCE REPORT

Roz Hewsenian, Wilshire Associates, highlighted the CalPERS Total Fund quarterly report for the period ended December 31, 2003. It was noted that 2003 was a very good year where implementation as well as investment policy added considerable value (200 basis points) and staff was commended.

AGENDA ITEM 7a – ALTERNATIVE INVESTMENT MANAGEMENT PROGRAM, Update on Environmental Investing

Rick Hayes, Senior Investment Officer, Leon Shahinian, Senior Portfolio Manager, Joncarlo Mark, Portfolio Manager, William Chu, Investment Officer, and Ben Finkelor and Tracy Twist, Graduate Student Interns, highlighted the strategy for the creation of the new program.

Comments were received from the following in support of creation of the program:

- Jill Ratner, Rose Foundation for Communities
- Carla Din. United Steel Workers
- Dennak Murphy, Services Employees International Union
- Kirsten Spalding, California Labor Federation AFL-CIO
- Joshua Golka, AFSCME
- Bob Epstein, Environmental Entrepreneurs

On **MOTION** by Mr. Angelides, **SECONDED** and **CARRIED** to approve the creation of the CalPERS Environmental Technology Program in the AIM Program as outlined in the agenda item.

Staff will follow through with budget requests and policy development as needed to implement the program.

The Chair directed staff to agendize the following environmental investing issues for future Investment Committee meetings:

- Corporate governance for environmental responsibility
- Possibilities in public equity for investment in environmentally screened funds that meet or exceed public market return expectations
- Review of our real estate portfolio

AGENDA ITEM 9g – CHIEF INVESTMENT OFFICER'S / ASSISTANT EXECUTIVE OFFICER'S REPORT, Results of Review of Permissible Equity Market Scoring for the Philippines

The Chair prefaced for the Committee and the audience that this item is a discussion of rescoring of issues that were brought up at the February Investment Committee meeting, not the taking of new issues. This is a review of issues brought to us last month for Wilshire Associates to go over with the third parties.

Roz Hewsenian reported that upon further review, Wilshire Associates sees no reason to change the Philippines' score, however, other countries have come forward, some making the claim that the information reflected by our sources is outdated. Wilshire Associates suggests using a formal "exposure draft" review period to address these kinds of issues in the future.

There was a large contingent present representing the Philippines. The following offered their rationale for and support of increasing the Philippines' score to meet or exceed the Permissible Equity Market threshold of 2.0:

- Albert Del Rosario, Philippine Ambassador
- Yolanda Ortega Stern, Federation of Philippine American Chamber of Commerce
- Ruth Uy Asmundson, City of Davis Mayor Pro Tem
- Rodel Rodis, National Federation of Filipino American Associations
- Bill Peavey, Norcal and Sons and Daughters of World War II Veterans

There was a lengthy discussion regarding clarification of the Committee's direction in March, the intent of the Permissible Equity Market Policy, the process, cure periods, annual timelines, and allowing consideration of new information beyond the annual timelines.

On **MOTION** by Mr. Westly, **SECONDED** and **CARRIED** to provide for a further review of all documents related to the scoring for the Philippines. The results of the review will include all information provided up to the date of the April Investment Committee meeting and will be presented to the Committee at its April meeting for its consideration and decision.

YES NO ABSTAINED

Abrams

Brown

Carlson

Diehr

Eliopoulos

Harrigan

Mathur

Navarro

Quevedo

Shimada

Valdes

Westly

Additionally, Wilshire Associates was directed to review new information submitted by other countries which may also affect their scores. That information will be presented to the Committee in April as well.

The Committee recessed from 1:05 p.m. to 1:50 p.m.

AGENDA ITEM 6a – REAL ESTATE, R Street Subcommittee Report

Mr. Carlson, R Street Subcommittee Vice Chair, presented the summary of the March 12, 2004, R Street Subcommittee meeting.

AGENDA ITEM 7b – ALTERNATIVE INVESTMENT MANAGEMENT PROGRAM, Privatization Policy Update

Allan Emkin, Pension Consulting Alliance, reported on the status of the draft privatization policy.

AGENDA ITEM 8a – PUBLIC MARKETS, Legislators' Retirement System Asset Allocation

Pat Pinkos, Senior Investment Officer, Ron Seeling, Chief Actuary, and Roz Hewsenian, Wilshire Associates, presented the item.

On **MOTION** by Mr. Harrigan, **SECONDED** and **CARRIED** to adopt the Strategic Asset Allocation and Ranges as presented in the agenda item.

AGENDA ITEM 8b - PUBLIC MARKETS, SPARX Asset Manager Update

Christy Wood, Senior Investment Officer, Ted White, Corporate Governance Director, and Devin Lamb, Investment Officer, presented the item.

Representatives of the SPARX Asset Management Co. provided an annual update regarding the fund and responded to questions from the Committee. The representatives were Shuhei Abe, Sho Miyasaka, Tai Wakabayashi, and Jim Cox.

AGENDA ITEM 8c – PUBLIC MARKETS, Best Practices for Ethical Conduct for External Managers

Mark Anson, Chief Investment Officer, and Christy Wood, Senior Investment Officer, presented the item.

On **MOTION** by Mr. Harrigan, **SECONDED** and **CARRIED** to approve the list of best practices as amended and approved sending the list to our external managers and consultants and make compliance with them a prerequisite for engagement with CalPERS. If there is resistance from the external managers, the issue must be brought back to the Committee for further review.

AGENDA ITEM 8d – PUBLIC MARKETS, Mutual Fund Protection Principles

Christy Wood, Senior Investment Officer, presented the item.

On **MOTION** by Mr. Harrigan, **SECONDED** and **CARRIED** to endorse the Mutual Fund Protection Principles proposed by California Treasurer Angelides, North Carolina Treasurer Moore, and New York State Comptroller Hevesi.

The Committee further noted that such principles are best implemented by the Securities and Exchange Commission (SEC) and further directed staff to communicate our support of these principles to the SEC and ask them to implement these or similar principles.

AGENDA ITEM 8e – PUBLIC MARKETS, Micro-Cap Portfolio Management

Christy Wood, Senior Investment Officer, and Carl Guidi, Portfolio Manager, presented the item. Roz Hewsenian was available to respond to questions from the Committee.

On **MOTION** by Ms. Mathur, **SECONDED** and **CARRIED** to approve internally managing the Micro-Cap Portfolio to a customized benchmark which will complement the CalPERS 2500 Index Benchmark and together provide total domestic equity exposure less tobacco and REIT securities.

AGENDA ITEM 8f – PUBLIC MARKETS, Increased Commitment to Relational Investors

Christy Wood, Senior Investment Officer, Ted White, Corporate Governance Director, and Devin Lamb, Investment Officer, presented the item. Roz Hewsenian was available to respond to questions from the Committee.

Representatives of Relational Investors provided an update regarding the fund and responded to questions from the Committee. The representatives were Ralph Whitworth and Jim Hearty.

On **MOTION** by Mr. Harrigan, **SECONDED** and **CARRIED** to approve an increase in commitment to Relational Investors, LLC to \$1 billion subject to satisfactory negotiation of legal documents.

AGENDA ITEM 8g – PUBLIC MARKETS, Internal Corporate Governance Policy Committee

Mark Anson, Chief Investment Officer, Christy Wood, Senior Investment Officer, and Peter Mixon, General Counsel, presented the item. Staff recommends the establishment of an Internal Corporate Governance Policy Committee. This Committee will be comprised of the President of the CalPERS Board of Administration, the Chief Executive Officer, the General Counsel, the Chief Investment Officer, the Senior Investment Officer for Global Equity, and the Public Affairs Office. This Committee will have standing meetings and be charged with policy development and setting strategy for CalPERS' engagement with the community at large. This will be a proactive work group that is issue-oriented.

There was a discussion regarding whether there was a need for a committee charter, delegation of authority, and legal analysis.

On **MOTION** by Mr. Harrigan, **SECONDED** and **CARRIED** to approve the establishment of an Internal Corporate Governance Policy Committee.

Mr. Carlson voted no.

AGENDA ITEM 8h - PUBLIC MARKETS, Corporate Governance Resource Pool

Christy Wood, Senior Investment Officer, Ted White, Corporate Governance Director, and Bill McGrew, Investment Officer, presented the item.

On **MOTION** by Ms. Mathur, **SECONDED** and **CARRIED** to approve the issuance of a Request for Proposal with a "Spring Fed Pool" feature for corporate governance resources.

AGENDA ITEM 8i – PUBLIC MARKETS, NYSE Trade-Through Rule

Christy Wood, Senior Investment Officer, Ted White, Corporate Governance Director, and Bill McGrew, Investment Officer, presented the item.

On **MOTION** by Mr. Harrigan, **SECONDED** and **CARRIED** to direct staff to draft and send a comment letter to the Securities and Exchange Commission supporting the commission's proposed amendment to the existing Trade-Through Rule.

AGENDA ITEM 9 – CHIEF INVESTMENT OFFICER'S / ASSISTANT EXECUTIVE OFFICER'S REPORT

The Committee accepted the following Chief Investment Officer reports:

- a. Asset Allocation Report Staff informed the Committee of their intent to trim back some of the equity exposure and put it into the fixed income market.
- b. Status Report (no items to report)
- c. Report on Disclosure of Closed Session Action Items

The total market value of the fund as of January 31, 2004, was approximately \$164.1 billion and the total book value was approximately \$129.1 billion.

AGENDA ITEM 9d – CHIEF INVESTMENT OFFICER'S / ASSISTANT EXECUTIVE OFFICER'S REPORT, Wilshire Associates Key Personnel Changes

Mark Anson, Chief Investment Officer, and Greg Hood, Division Chief, presented the item. Roz Hewsenian, Wilshire Associates, was available to respond to questions from the Committee.

On **MOTION** by Ms. Mathur, **SECONDED** and **CARRIED** to approve changes to Wilshire Associates Key Personnel as submitted.

Staff will follow through to implement the key personnel changes in the Wilshire Associates Contract No. 1999-738.

AGENDA ITEM 9e – CHIEF INVESTMENT OFFICER'S / ASSISTANT EXECUTIVE OFFICER'S REPORT, Agenda Item Format Review

Mark Anson, Chief Investment Officer, and Greg Hood, Division Chief, provided a status report regarding the agenda item format review project being conducted by consultant R.V. Kuhns.

The Committee accepted the information report.

AGENDA ITEM 9f – CHIEF INVESTMENT OFFICER'S / ASSISTANT EXECUTIVE OFFICER'S REPORT, Performance Reporting and Compliance Officer Update

Mark Anson, Chief Investment Officer, and Greg Hood, Division Chief, provided an update on the independent validation of reporting performance returns to the Investment Committee and establishment of a compliance function within the Investment Office.

The Committee accepted the information report.

AGENDA ITEM 10 – ACTIVITY REPORTS

The Committee accepted the following activity reports:

- a. Alternative Investment Management Program
- b. Absolute Return Strategies Program
- c. Real Estate Opportunistic Program (this report was accepted as corrected)

AGENDA ITEM 11 - QUARTERLY PERFORMANCE / ANNUAL REVIEW REPORTS

The Committee accepted the following quarterly performance reports:

- a. CalPERS Affiliate Funds
- b. Legislators' Retirement System
- c. Deferred Compensation Program
- d. Security Lending Earnings

AGENDA ITEM 12 - INVESTMENT TRANSACTIONS

The Committee accepted the Investment Transactions Reports.

AGENDA ITEM 13 - DRAFT APRIL 2004 AGENDA

The Committee accepted the proposed April agenda.

AGENDA ITEM 14 - PUBLIC COMMENT

There were no additional comments from the public.

The meeting was adjourned at 3:25 p.m.

The next meeting of the Committee is scheduled for April 19, 2004, in Sacramento, California.

FRED BUENROSTRO
Chief Executive Officer